

ABSTRACT

A steel wire has tempered martensite, comprises, as essential components, by mass, C: 0.53 to 0.68%; Si: 1.2 to 2.5%; Mn: 0.2 to 1.5%; Cr: 1.4 to 2.5%; Al: 0.05% or less; further comprises, as a selective component, Ni: 0.4% or less; V: 0.4% or less; Mo: 0.05 to 0.5%; or Nb: 0.05 to 0.5%; and further comprises remainder essentially consisting of Fe and inevitable impurities, wherein the grain size number of prior austenite is 11.0 or larger, and the proof stress ratio ($\sigma_{0.2}/\sigma_B$), namely, a ratio of 0.2% proof stress ($\sigma_{0.2}$) to tensile strength (σ_B) is 0.85 or lower. Satisfying the above requirements makes it possible to produce a steel wire for high-strength spring excellent both in workability (cold workability), and in sag resistance and fatigue properties.